Feedback Form

Enabling Resources Program (ERP) - Storage and Co-located Hybrid Integration Project

Meeting Date: July 24, 2025

Feedback Provided by:

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Following the **July 24, 2025**, engagement webinar, the Independent Electricity System Operator (IESO) is seeking feedback on the items discussed during the webinar. The presentation and recording can be accessed from the engagement web page.

Please submit feedback to engagement@ieso.ca by **August 21, 2025**. If you wish to provide confidential feedback, please submit it as a separate document, marked "**Confidential**." Otherwise, to promote transparency, feedback that is not marked "Confidential" will be posted on the engagement webpage.

General ERP Feedback:

Topic	Feedback

Feedback on the engagement approach, meetings, or the S/H Project in general?	The ESR Consortium strongly supports the IESO in pursuing this process and making the needed fundamental changes to the IESO-Administered Market (IAM) to appropriately integrate energy storage resources into the market and extract the full capabilities and benefits for Ontario. The ESR Consortium supports the Design Batches and Modules approach including the timeline and process objectives of the ERP. The ESR Consortium expects Design Memos to provide detailed understanding of specific design changes and how ESR Market Participants (ESR MPs) will act in the updated market. While a high-level timeline and implementation date of 2027-2028 has been stated by the IESO and the first design memo of October 2025 has been targeted, the ESR Consortium believes that the IESO must provide more detail on the timing of all design memo steps and implementation. The ESR consortium does not expect the IESO to be held to the timeline firmly, but that a more detailed timeline and posting of design memos will allow stakeholders to plan and ensure resources are available to review and analyze the Design Memos. Further, a more detailed timeline will allow participants to understand how

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	different Design Memos and market design changes will interact with each other. Further, the ESR consortium strongly supports implementation as early as possible to avoid the requirement to register and operate under one market design for a short period and then need to make changes for a new market design so early in the life of the asset. Finally, the ESR consortium suggests that IESO contract management for the storage contracts (e.g., LT1, E-LT) must participate in the design process to understand potential contract cost impacts for Ontario rate-payers when determining appropriate market design changes to achieve the ERP design objectives.

Storage/Hybrid Project Feedback:

Topic	Feedback
Telemetered SoC: Required for calculations in PD and RT timeframes. This value is expected to inform the IESO of the injection capability of the resource in MWh and therefore should account for any losses. Current performance requirements will continue, with data sent every 4 seconds to the IESO. Do MP's have concerns or foresee challenges with this requirement?	A key challenge for Telemetered SoC monitoring is the impact of environment, namely ambient temperature. Depending on the temperature the capability to inject or withdrawal may be hindered and therefore a static calculation of SoC. The ESR Consortium understands that the use of Accessible Range for SoCMax/Min compared to Absolute Max/Min SoC could be used to manage these dynamic impacts on monitoring SoC. ESR is interested in understanding how the Telemetered SoC will be utilized within the IESO's scheduling and dispatch algorithm. The ESR Consortium sees a potential issue in requiring data to be shared every 4 seconds. The ESR consortium requests the IESO to provide details on the incremental set-up costs expected to provide data every 4 seconds and to provide analysis on the feasibility to provide this data from all Energy Storage Resources. Further, the ESR Consortium requests the IESO provide an analysis of comparison between 4 second and 5-minute intervals for Telemetry submissions.

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OR Offers: Are there concerns about OR provided by storage being branched from withdrawal to injection?	The ability to provide branched OR is an example of the ERP market design changes extracting the full capabilities of energy storage resources to support the Ontario power system. ESR consortium supports the pursuit of branching. Similar to other comments, the ability to provide branching may require IESO Contract Management approval and therefore no branching market design changes should be included until IESO Contract management has clarified if consent is require and granted.

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Ramp Rates: Do you have feedback on the 100 MW/min static ramp rate and utilizing a standardized approach to dispatch?	The ESR Consortium does not support the static 100 MW/min ramp rate. A static ramp rate that is significantly below the technical capabilities of energy storage resources causes economic harm to energy storage participants. The IESO's reasoning for a static ramp rate is reliability and operability challenges in dispatching resources to meet system conditions. If reliability or operability challenges exist due to higher ramp rates for energy storage resources (or for any resources for that matter) it is the responsibility of the IESO to clearly demonstrate through examples & costs to justify the artificial restrictions and lost profit for market participants. In addition, Distribution connected resources may be artificially restricted due to inability of IESO or LDC to appropriately monitor the distribution system limits that may not be appropriate for fair and equal market participation.
CycleDEL: Is CycleDEL sufficient to limit the cycling for storage in Phase 1? What is the expected default setting?	The ESR Consortium generally supports the use of the CycleDEL component of the ERP market design changes to help manage warranty and cycling limits. The CycleDEL should provide the ability for an ESR MP to manage their DAM schedules and buy-back risk in the RTM, which is valuable. More working example for CycleDEL is required.

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Exceeding Min/Max SoC limits: Do you anticipate needing to exceed min/max SoC limits for specific market opportunities and what are the typical min/max limits – is this a fixed/static value? Frequency and magnitude of exceeding these limits? Are there equipment concerns from this, what are the specific concerns (faster equipment aging/degradation, other)?	Generally, ESR MP will not want to exceed min/max SoC limits to ensure warranties are not invalidated and/or equipment life expectancy is degraded. This means that the mix/max limits would be a static value that can be input at registration. That being said, market conditions and profitability may justify stressing the ESR. Further, as the ESR naturally degrades over time the min/max limits may need to be adjusted so the IESO registration process should allow for updates by resources to reflect the changing limits.

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Derates: Do you have feedback on the derates that the IESO is considering; specifically, requirements to ensure that these are primarily used sporadically? Will there be separate derate values for injection and withdrawal? Will MPs need to derate their SoC limits? Does this only require updates to min/max SoC limits, which will result in overall SoC reduction? How frequently does the MP need to update the round-trip efficiency?	The ESR Consortium believes it is prudent to have separate derate values for injection and withdrawal as storage technology and O&M challenges may require different temporary and permanent derates. Depending on the life expectancy and performance of the storage technology, derates of SoC limits may be required in the future to maintain the capabilities of the storage facility. The derates could be a function of how significant the usage and participation of energy storage are in the future IAM. Finally, round-trip efficiency may need to be derated (or re-rated) depending on the performance of the energy storage resources in addition to actual operating capabilities in different Ontario environments (e.g., winter and summer capabilities). The ESR Consortium believes as a new market entry resource the Derates structure for Energy Storage Resources should be flexible to allow dynamic changes and growth for both the resources and the IESO system operators. The ESR Consortium can provide further insights and commentary in coordination with energy storage service providers if the IESO is interested

General Comments/Feedback

Overall, the ESR Consortium supports the process, priorities and objectives of the ERP. Changes to more appropriately integrate ESRs into the IAM is required to ensure full capabilities and value is offered to the Ontario power system and electricity market. There are a number of areas where further

information and action is required from the IESO. First, the changes being considered as part of the ERP will influence scheduling, dispatch, pricing and settlement for energy storage resources in addition to all market participants. The complexity of energy storage resource operations will result in different market outcomes and changing dynamics in the power system. For the benefit of Ontario consumers and market participants, addressing market inefficiencies and determining future market design changes (including potential power system planning and procurement actions) will require broader stakeholder participation and analysis. This cannot happen if market data and information are restricted and withheld by the IESO. The launch of the renewed market should have occurred with a revamping of IESO market data publication standards. In particular, the IESO has failed to adhere to best practices of sharing detailed information on scheduling and dispatch outcomes including the inputs on a nodal basis for i) energy offers, ii) energy bids, iii) non-dispatchable load assumed by IESO, and iv) load assigned and observed at each node. This information is critical to understanding the market outcomes and determining if they align with what was expected from the IESO's scheduling and dispatch tool (e.g., are the changes for the ERP playing out as expected). Further, the market data discloser is required for Market Participants to learn how the market is operating and determine optimal energy bid and offer strategy by back-testing against actual market data. In the ESR Consortium's opinion, this component must be included as part of the ERP or as a parallel process. The IESO's own jurisdictional review (https://www.ieso.ca/-/media/Files/IESO/Document-Library/corporate/applications/PA-IESO-Markets-and-Planning-Data-JR-Report-20230623.pdf) demonstrates that the IESO is a laggard compared to other RTOs/ISOs. Second, the changes through the ERP will impact ESRs that are under long-term contract with the IESO. The market design changes being contemplated may require contract provision changes. IESO contract management must participate in the ERP design process so that ESR MPs can understand the full impact of market design changes and operating obligations to provide informed feedback and support for the IESO. Third, the SoC limit ERP design changes should be initiated as voluntary measures to allow proponents ability to potential manage their own SoC if they believe the proposed changes will negatively impact their operational capabilities and/or profitability. Finally, many of the market design changes may require investments by the Market Participant. For example, requirements to observe station service and auxiliary load to determine SoC may require new metering costs and contract obligations. The IESO has not stated who should fund these changes and if it is the Market Participant, how they will be compensated through the market or through their respective contracts. This further enhances the need for IESO contract management to participate directly in the ERP design process.

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